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occasionally, though rarely, show when obstacles are put in the way of their carrying out their usual plan of action. Some wasps always put exactly five half-dead caterpillars in the cell of a male grub and ten in the cell of the female. Does this show that they can count? If not, it shows that they can do something else which answers the purpose just as well. Ants always recognize the members of their own community, though they may be 500,000 in number; this is not done by means of any sign or password, for it can still be done when the one recognized is senseless from intoxication. Experiments which were taken as showing that bees have a special sense of direction are proved to be quite inconclusive; the returning to the hive must have been done by mere recognition of known objects. There is an admirable résumé of the discussion as to whether the eyelets of compound eyes give each the whole image or only a small part of it; the latter opinion is plainly made out to be the better one. Lubbock regards it as mysterious that the rods and cones of the vertebrate eye should point outwards instead of inwards, though he says that it has some connection with development. It is difficult to see how there could have been any other arrangement, when it is remembered that the vertebrate eye is first a bladder and then a double cup pushed forward from the brain, instead of being a depression in the outer integument. The reason for this development, according to Balfour and Carrière, is simply that the portion of the ectoderm which was destined to give rise to the eyes has, in vertebrates, already been drawn in to form the brain. Neither is it mysterious that animals should see ultra-violet rays of light which to us are indistinguishable from blackness. There is good reason to believe that the reason we do not see ultra-violet is because the ultra-violet rays are strongly absorbed by the refracting media of the eye; an animal with a smaller eye would naturally not suffer so much from this inconvenience.

C. L. F.

Zum Mass der Schallstärke. DR. PAUL STARKE. Wundt's Philos. Stud. V. 1. 1888.

In completion of a former study on the question of the relation of the height of fall and of the weight of a falling body to the intensity of the sound that it produces, the author reports the verification of his former results. He finds that within the limits of error the sound is directly proportional to the height, with a constant weight, and to the weight, with a constant height. The different results of former investigators arose from their neglect of the influence of the order in time of the standard sounds and those to be compared, and of the influence of Weber's law. The sounds were produced by the fall of ivory balls of 8.07 and 16.12 grams weight, on an ebony plate from heights of from 100 to 600 mm.

Tonstärkemessung. ERNST GRIMSEHL. Wiedemann's Annalen, No. 8b, 1888. Also *in extenso* in Programmabhandlung des Realgymnasiums zu Hamburg, 1888.

Starting from an observation of Lord Rayleigh's that thin plates in a resonant column of air tend to place themselves perpendicular to the axis of the column, the author has constructed a phonometer in which the degree of rotation of a thin disk of mica measures the

intensity of the tone. The amount of rotation is measured by the deflection of a small mirror, as in a reflecting galvanometer. The tube in which the bit of mica hangs is closed at one end by a thin rubber diaphragm, and at the other by a piston, by means of which it can be adjusted to tones of different pitch. Cuts of the phonometer and curves representing the intensity of the tone of sounding pipes under different conditions are given, but the formulæ for exactly connecting the amount of deflection with the intensity of the sound have not yet been reached.

Esperienze sopra i corpuscoli Vater-Pacini del mesenterio di gatto.
FUBINI. Annali universali di Medic. e Chirurgia, Nov. 1887,
noted in La Psichiatria, An. V, fasc. 4.

The experimenter spread the intestines and mesentery of a chloroformed cat upon a warmed glass plate, and after the animal had regained consciousness, stimulated the nerves of the Pacinian bodies. He took the dilation of the pupils as an index of painful sensation, and used for comparison those produced by the stimulation of a nerve of general sensibility. After testing with electrical, mechanical, chemical and thermal stimuli, he concludes, from the similarity of the pupil reactions in the two cases, that it is to the nerves of general sensibility that the Pacinian bodies belong. Such a relation has before been conjectured, but it cannot be held as yet demonstrated, if this experimenter has been fully reported. The responses of the pupils are too indirect and general an indication to establish the identity of the sensations in the two cases.

Influence dégénérative de l'alcool sur la descendance. A. MAIRET and
COMBEMALE. Compt. Rend. CVI, p. 667, March 5, 1888.

These investigators, in prosecuting a research upon chronic intoxication in animals, have made a few very interesting preliminary experiments on the effect of alcohol on offspring. For the first experiment a vigorous and intelligent shepherd dog was given daily through a period of eight months, increasing doses of 72° absinth till he received 11 gr. per day per kilo of weight. This treatment produced hallucinations, illusions and dementia, with general paralytic troubles. When in this condition, but in a period when dosing was suspended, he was given access to a young, vigorous and intelligent female. She bore twelve pups; two were born dead, and none outlived 67 days. Three died from accident. The other seven suffered variously from epileptiform attacks, verminous enteritis, pulmonary and peritoneal tuberculosis, and besides, from lesions to be directly attributed to alcoholic degeneration—thickening of the skull, *sutures précoces*, adhesions of the dura mater to the skull, difference in weight of the two hemispheres, and fatty degeneration of the liver. The mother herself remained well. In the second experiment, a strong and intelligent spaniel bitch was given, during the last twenty-three days of gestation, from 2.75 to 5.75 grams of 72° absinth per kilo of weight. She first bore four pups, three alive and one dead, and, thirty-six hours later, two more dead. Of the three living ones, two were well formed but unintelligent; the third, a bitch, was less well developed, lazy, greedy, ungraceful in motion, short-winded, and too dull of smell to find her food in the